

A4
b) an amino acid sequence as shown in SEQ. ID. No. 4.

A5
9. (Amended) The method of claim 6 wherein said expression vector further comprises a
transfer molecule [is] glutathione-S-transferase.

10. (Amended) The [An] expression vector of claim 7, wherein said expression vector is a
recombinant plasmid adapted for insertion into and transformation of a plant.

REMARKS

The office action of September 1, 1999 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1, 3, 5-7, and 9-10 remain in this case, claims 1, 3, 5, and 9-10 being amended, and claim 4 being cancelled by this response.

The Restriction Requirement

The Examiner has made a restriction requirement and has identified six groups as follows:

Group I - recited in claims 1, 3-7, and 9-10.

Group II - recited in claim 11.

Group III - recited in claim 12.

Group IV - recited in claims 13-14 and 19.

Group V - recited in claims 15-17.

Group VI - recited in claim 18.

During a phone interview on August 19, 1999, the applicant's attorney told the Examiner that Group I, claims 1, 3-7 and 9-10 with the plant species would be elected for further prosecution with a traverse of the requirement.

The election of Group I, plant species, is confirmed. These requirements for restriction and election as best understood are respectfully traversed.

The MPEP states the following with regard to stating a prima facie case of restriction between patentably distinct inventions:

“There are two criteria for a proper requirement for restriction between patentably distinct inventions:

1) The inventions must be independent (see MPEP 802.01, 806.04, 808.01) **or distinct as claimed** (see MPEP 806.05-806.05(i)); and

2) There must be a **serious burden on the examiner** if restriction is not required (see MPEP 803.02, 806.04(a) - 806.04(j), 808.01(a) and 808.02).

All of the claims recite related inventions in that each involves an IIM protein or DNA sequence. The Examiner did not make a prima facie case to support a restriction requirement. Both criteria for restriction must be established and the Examiner has not shown any burden in the claimed inventions. Furthermore, distinct inventions do not create a burden on the Examiner that is sufficient to justify a restriction requirement without a showing of the need for separate searches.

All of the inventions would be searched within the same classes and subclasses. Even if some of the inventions would be classified separately, a thorough search of the prior art for any one of the inventions would include the classes and subclasses of the other inventions.

The Applicant requests that the restriction requirement be withdrawn. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

Objection to the Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. The specification has been amended to overcome the objection.

Claim Objections

Claim 1 is objected to due to informalities. Claim 1 has been amended to overcome this rejection. Reconsideration of the objection to claim 1, as amended, is respectfully requested.

The Rejection Under 35 U.S.C. §112, Second Paragraph

Claims 1, 3-5 and 9-10 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the rejection.

Claims 1, 3, 5, and 9-10 have been amended to overcome this rejection. Claim 4 has been cancelled. Reconsideration of the rejection of claims 1, 3, 5, and 9-10 is respectfully requested.

The Rejection Under 35 U.S.C. §101

Claim 1 is rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Claim 1 has been amended to overcome this rejection. Reconsideration of claim 1, as amended, is respectfully requested.

The Rejection Under 35 U.S.C. §103(a)

Claims 1, 3, 6-7, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer *et al* (U.S. Patent No. 5,866,788) over Wang et al. (The Journal of Biological Chemistry, Vol. 272(26): 16663-16669). Claims 1, 3, 7, and 10 are drawn to a plant transformed with a gene expression vector comprising a promoter sequence fused with a nucleic acid sequence from *Trichoplusia ni* larvae encoding IIM (Invertebrate Intestinal Mucin) protein expressed in a host or a plant, wherein the transformed plant exhibits resistance against insect damage. Claims 6 and 10 are drawn to a method of producing and recovering IIM protein in insect cells using a baculovirus expression vector.

According to the Examiner, Kramer *et al* teaches a plant transformed with a plasmid expression vector comprising an insect chitinase gene from tobacco hornworm (M. Sexta) encoding chitinase protein under the control of a promoter, for insect damage control, and shows that recombinant insect chitinase has insecticidal activities against tobacco hornworms. Kramer

also teaches methods of producing and recovering M. sexta protein from cell (*T. ni* Hi-5) lysates. However, Kramer *et al* does not teach the subject matter of the current application. The Examiner points out the fact that Kramer *et al.* does not teach plants transformed with a vector comprising a gene from *T. ni* larvae. Also, Kramer *et al.* teaches no IIM proteins.

The Applicant requests that the Wang *et al.* (The Journal of Biological Chemistry, Vol. 272(26): 16663-16669) reference be removed as prior art, since it is not applicable according to 35 U.S.C. 102. Under 35 U.S.C. §102(b), a person shall be entitled to a patent unless

“the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, **more than one year prior** (emphasis added) to the date of the application for patent in the United States”.

The present application is a continuation-in-part application of co-pending parent patent application serial number 09/103,429, filed June 24, 1998. The claims in question are fully supported by the original specification. This date is less than a year after the publication date of June 27, 1997 of the Wang *et al.* reference. The authorship of the Wang *et al.* reference is identical to the inventorship of the present application. Removal of the Wang *et al.* reference as prior art negates the obviousness rejection. Therefore, reconsideration of the rejection of claims 1, 3, 6-7, and 9-10 is respectfully requested.

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

Respectfully Submitted:

By: 

Christopher A. Michaels, Reg. No. 34,390
Attorney for Applicant

Brown, Pinnisi & Michaels, PC
400 M&T Bank Bldg - 118 No. Tioga Street
Ithaca, New York 14850
(607) 256-2000 • (607) 256-3628 (fax)
e-mail: bpm@bpmlegal.com

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APPENDIX OF CLAIMS

The following are the claims in this case, as amended to date:

- 1 1. A transformed plant, comprising an expression vector , wherein said expression vector
2 comprises a gene encoding an invertebrate intestinal mucin (IIM) protein operably linked
3 to an expression control sequence, such that said transformed plant is capable of
4 expressing said IIM protein.
- 1 3. A recombinant DNA sequence comprising a DNA sequence that codes for an IIM protein,
2 wherein the nucleic acid sequence of said recombinant DNA sequence is selected from
3 the group consisting of
4 a) a cDNA sequence as shown in SEQ. ID. No. 1; and
5 b) a cDNA sequence as shown in SEQ. ID. No. 2.
- 1 5. The recombinant DNA sequence of claim 3, wherein said IIM protein has an amino
2 acid sequence selected from the group consisting of:
3 c) an amino acid sequence as shown in SEQ. ID. No. 3; and
4 d) an amino acid sequence as shown in SEQ. ID. No. 4.
- 1 6. A method of producing a IIM protein or peptide comprising:
2 a)transforming a host cell with an expression vector comprising a promoter
3 operatively linked to a nucleotide sequence which codes for a
4 predetermined protein or peptide of a IIM protein;
5 b) culturing said host cell under conditions such that said IIM protein is expressed
6 in recoverable quantity;
7 c) lysing said host cell; and
8 d) recovering said IIM protein.

- 1 7. A gene expression vector containing a recombinant DNA sequence encoding a *Trichoplusia*
2 *ni* IIM protein sequence.
- 1 9. The method of claim 6 wherein said expression vector further comprises a transfer molecule
2 such as glutathione-S-transferase.
- 1 10. The expression vector of claim 7, wherein said expression vector is a recombinant plasmid
2 adapted for insertion into and transformation of a plant.